# PHOTOGRAPHING MARS.

#### Just at Present the Conditions Are Unusually Favorable.

What in some respects is the most fascinating of all astronomical questions-whether other spheres in the universe besides ours are the homes of sentient beings-is brought anew to popular attention by a celestial incident anknown, the planet on which the conditions are umably most favorable to habitability is Mars, and opportunities for studying it are therefore utilized with peculiar interest. The orbit of Mars lies next outside that of the earth, and at intervals slightly exceeding two years the earth catches up with and passes its slower sun Mars is said to be "in opposition to the sun." Owing to the eccentricity of the path followed by Mars, however, its distance as sixty million miles, while at others it is not nore than thirty-five millions. The opposition scheduled for July 12, 1997, is the most advantageous in this respect for fifteen years, and will not be matched for another fifteen. The two bodies are now running along almost side by side, and if the mysteries in which the ruddy orb next beyond the earth is clouded are not dispelled by the study of the last few and next few weeks, at least the present chance for pene-

It is believed that the climate of Mars closely nbles that of the earth. The axes of the two odies are tilted over at about the same angle o, and there is evidence of a regular succeson of seasons on Mars, the most conspicuous erhaps being the systematic appearance and of enormous white patches, first at one pole and then at the other. These represent the condensation freezing and melting of some fluid, possibly (though not certainly) water. It is suspected that there is also an atmosphere sufficient to establish a circulation between poles and tropics. After the melting of the polar nows the resulting liquid might be distributed by gravitation alone, but when it evaporates in ow latitudes some sort of a vehicle seems to be is that argument rather than any direct evidence (like that of the spectroscope) which jus-tifies the belief that Mars has at least a lit-

#### DIVERSIFIED SURFACE.

The surface of the body which is now receiving keen scrutiny is sufficiently diversified to tempt observers into charting its geography so that various localities can be identified in any ssion. For a long time there was thought to be a close resemblance to the earth in the distribution of land and water. In the northn hemisphere the color was generally of a sty yellow or brown, though subject to nuor variations of tink, while in the outhern hemisphere the prevailing hue is a regarded as continental, and the latmarine, and their subdivisions were accordingly. The names originally dopted are still retained as a matter of cone, but the notion that there are occans is now pretty well discredited. The dissimilarity in color may eventually be exained on the theory that some greas are cov-ed by vegetation while others reveal sandy

It ought to be added that in practically all ictures made of Mars-and this is true ally of drawings-there is an unintengreat exaggeration of the contrast of color and brightness of adjacent tracts. gradation of tint is often so delicate that it s almost impossible to tell where the dividing line is that separates a gray patch from its yellow environment. Efforts to record general are beset with peculiar difficulty, the ore so because from one opposition to the next in a period of fully two years—real differ-nces in both tint and outline unquestionably Indeed, these changes are often more

or William H. Pickering, at one time duty at Percival Lowell's observatory at Flagstaff, Ariz., reported a few years ago that within a period scarcely exceeding a month he noticed that a particular area which he was brown and violet! In the distinctness of the large markings of the surface of Mars, there-fore, the vast majority of the available illustra-

### CANALS OF MARS.

The most puzzling and most suggestive feat-ure of the planet which has been named after the god of war is the network of fine lines which Schiaparelli, of Milan, called "canals," though carefully disavowing any intention to interpret them by the use of that designation The Italian created a profound sensation about twenty years ago by reporting his discovery, and his announcement was received with skepticism by his professional brethren, the more so because he coupled with it the statement that at times some of the lines appeared double. Other astronomers have followed up his work, the most attention having been given to it by Percival Lowell, of Boston, to whose observatory at Flagstaff reference has just been made. Up to the present several hundred of these lines have been reported and charted, though not alleged that they are all visible at one time. In fact, Schiaparelli remarked in a treatise which appeared in 1888 that in distinctness, coloration, width and other traits the canals showed remarkable differences from time to time. Sometimes they could not be seen where they were expected to be. "Simois," he remarked, "could not be detected at all in September, 1877. It existed as a fine line in October. In 1879 it exhibited a breadth and blackness rivalling Nilosyrtis" (the biggest of all the canals), and having a width estimated at about one hundred and forty miles.

When they first develop the canals constitute feintly discernible gray lines. By degrees, it is said, they grow in darkness and vividness. They are not uniform in size, seldom measuring less than 15 or 20 miles across, often exceeding thirty, and occasionally reaching one hundred or one hundred and twenty-five. When doubling, or "gemination," is observed the space between the two lines is sometimes as narrow as thirty or forty miles. Both Schlaparelli and Lowell put the maximum interval at between one hundred and fifty and one hundred and seventy-five miles. Lowell has noted at the intersection of two canals round or oval spots, of the same dark hue as the canals. He calls them cases.

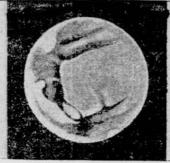
### WHAT DO THEY MEAN?

Concerning both the genuineness and meaning of these markings wide differences of opinion have prevailed. As they can be observed only with a powerful instrument and under favor-able atmospheric conditions, few astronomers have attempted to verify or disprove Schiaparelli's work. Partly from a lack of individual experience and partly because of a disagreement between drawings made at the same time and representing the same region, there has been a disposition to doubt whether there were any canals at all. Another prominent Frenchman, Antoniadi, ling associated with Flammar-ion, declares that the duplication is certainly an illusion, due to imperfect focussing. Mr. Lowell, on the other hand, advances five rate reasons for pronouncing Antoniadi's theory

und and incredible. Mr. Lowell, it is hardly necessary to add, is the chief advocate of the theory that the canals are elaborate engineering works, undertaken for purposes of irrigation. The terrestrial observer sees in these lines, he holds, not water, but vegetation that has been made possible by water cenducted to the scene in channels too narrow to be visible from the earth. The accuracy of his interpretation is, of course, entirely independent of the existence of the lines themselves. The genuineness of the canals and even the reality of an occasional gemination may be accepted, on adequate proof, without assuming that they are the product of an intelligence fully nan or more than human.

It is because the representations of Schiaparelli and others may be confirmed that Mr. Lowell has once or twice tried to get protographs of Mars. These ought to be free from any psychological influence and hence ought not SOME RECENT VIEWS OF THE PECULIAR MARKS OR "CANALS" OF MARS, TAKEN BY THE DIRECTOR OF THE ASTRO-NOMICAL OBSERVATORY AT BOURGES, FRANCE.









Flagstaff, but an expedition sent by him to South America, and under the direction of Professor David P. Todd, promises even more valnable testimony. That the party is already at work is shown by a telegram received last week saying that the canals had been photographed.

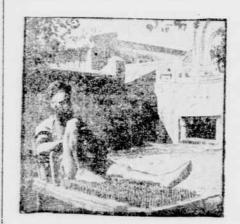
### WASHING IN THE GANGES

A Thing to Give Believer in Germs a Shudder.

By William T. Ellis.

Benares, India, is holy Hindu ground. Even if such an outcast es a European should quit earth ess dense and more quiet than the earth's, but | 146,600 Hindus. That is why thousands of persons

face and body completely smeared with ashes, whereas the ordinary Hindu has only his arms and breast and forehead so marked. This holy man's



A HINDU "HOLY MAN" SITTING ON SPIKES.

and ash-filled. Although his sanctity is so great nat he is worshipped—I saw the act more than nee—he is not obliged to bother about the com-nor moralities which go along with the Western

clad, the adored centre of groups of American

# ONE MORE DISILLUSIONMENT.

At Benares I discovered a grievance against the stories I used to hear and read, when a youngster in Sunday school, about these fakirs and the others Hindu pilgrims to the Ganges cleansing flood. I saw thousands of the latter in a single day. It used to be represented that these men and women were all so smitten with a sense of their sins, so burdened with their consciousness of unholiness, that they performed all their exacting vows in order to secure spiritual release. But missionaries on the apot tell me that the Hindu is as lacking in a sense of sin as I found the Japanese and Chinese to be. They know little or nothing about what the Anglo-Saxon experiences. nothing about what the Anglo-Saxon experience as a consciousness of personal sin. What thes nothing about what the Anglo-Baxon experiences as a consciousness of personal sin. What these people are trying to explate is the dread burden of life itself, and to secure, by the favor of the in-numerable gods in their pantheon, a mitigation of life's ills in the next birth, in the long order of

reincarnations.

Every Hindu's dread is that he may at death be Every filindr's dread is that he may at death be transmigrated into a lower caste man, or even into a woman, or into an ass, a snake, a toad, or some other loathsome creature. His hope is that he may be rehern into a higher caste, possibly a Brahman, and eventually, in the dreary procession of ages, into Nirvana; which, while mystically explained in various ways, amounts really to the extinction of personal destity. Some of the helps. extinction of personal identity. Some of the 1 en even expect to proceed from this present life

into Nirvana.

Therefore all these washings. Early in the morning the people of this old city—Benares far antedates the Christian era—and the pilgrims from all dates the Christian era-and the pilgrims from all parts of the empire come down by thousands to the western bank of the Ganges in order to bathe. From infants to decrepid old men they dip into the water and mutter their prayers with an earnestness and sincerity which cannot be doubted. The great ghats, or steps down into the water, are throughd with devotees. Many carry away the water for household use or to be born laborated back labels to the effective and the statement of the statem riously back home to the pilgrim's native village. Only the western bank of the Ganges is efficacious; to die on the eastern bank is to be reborn an ass. So the western bank is lined with temples, ghats and palaces, in various stages of disrepair. is morit in erecting one of these structures, but no merit in maintaining one after another man has built it. One huge brownstone pelace especially, a wonder of workmanship, has "set down" in dis-orderly ruin on the hank.

# WASH DAY IN THE GANGES.

If ever modern science takes hold of India the ularity of Benares is gone, for this worship of Ganges is a thing to give a believer in germs shudders. People bathe in and drink the water right from the spot where sewage is seeping through the ghats. They are not troubled by the proximity of bathers in all stages of disease. The fact that corpses are souking in the stream just above them does not disturb the worshippers a The practice of burning the dead at Benares is

famous. After the body, wrapped in a thin cover-ing, has lain for a time in the Ganges, a rough funeral pyre, three or four feet high, is built of logs and sticks bought for the purpose, and it is consumed with more or less thoroughness. The parlah dogs thrive by the fact that the job is not always well done; I saw one cur gnawing a burnt fragment of a human body.

fragment of a human body.

I came to Benares prepared to find much to admire in Hinduism, but somehow I cannot get past the dirt and filthiness of it all. There, for another example, is one well, the most sacred bit of water in India. This is a pool the size of the swimming tank in an ordinary gymnasium, without inlet or outlet, filled from the Ganges, and cleaned out only once a year. To bathe in it one must pay a high fee, as well as buy flowers, milk, confectionery, sandalwood and other votive offerings that are put into the pool by the bathers. As a result of all these accomplishings the conferring that are put into the pool by the bathers. these accumulations, the contents, instead of being merely dirty water, are a viscous mass, nauseating even to look upon or to smell. Yet tottering old women, strong men and blooming youth ducked in this place. I was impressed by a touch of human sentiment here; a man and woman went into the pool tied together, thus hoping to insure that when they should be horn again they would be horn again they would be hey should be born again they would once more

me man and wife. The endeavor to give a fair representation of the

to registerer a delusion. Mr. Lowell has under-taken to do a little with his sensitive plates at Flagstaff, but an expedition sent by him to South America, and under the direction of Prosaw as the prominent feature of Hindu worship in Benares this paper would not be permitted transmission through the mails. The confinnest object of worship may not even be hinted at; while, so far from writing a description of the sculptures on the walls of one temple, they may not even be recalled without disgust. It is a distinct ascent to contemplate the sacred monkeys that fill one temple—more than two hundred of them scampering about the trees and the courts—or the sacred cows and bulls that abound throughout the city. When a wealthy Brahman dies a bull is turned loose in the city to wander through the narrow streets and to pillage, undisturbed, from the bazaars. The molten calf which the backslidden israelites worshipped is also here, to be purchased as a household god.

At the famous "Cow Temple" I saw and heard a row that would have attracted a mod anywhere in Christendom. A woman worshipper wanted to go

row that would have attracted a mob anywhere in Christendom. A woman worshipper wanted to go into the inner shrine, but the priest contended that she had not paid enough money. She shrilly insisted that she had, and tried to force her way past the priest. The latter thereupon struck her a resounding blow in the face, but even this could not deter the intending worshipper, and when I left, after watching the muss for ten minutes, the noise of the wrangle still filled the temple, although the other worshippers seemed to mind it as little as did. other worshippers seemed to mind it as little as dil the well fed cows that filled the temple court.

THEOSOPHY'S FLOURISHING COLLEGE. Theosophy, which here claims to be practically pure Hindusim, has established a great college at Benares, the Central Hindu College, with 700 students and a fine equipment of buildings. Mrs. Annie Besant herself, whom the late Colonel Olcott nominated at the direction of the "Mahatmas" as president of the Theosophists (although not all of the Theosophists seem inclined to resife the choice). nominated at the direction of the standards as president of the Theosophists (although not all of the Theosophists seem inclined to ratify this choice); lives here and is the head of the college. The Jay of my visit to the college she was in Madras, the world headquarters of theosophy, so my interview was with her assistant, an Englishwoman dressed in a saimon-colored kimono, with a white philosopher's robe draped over it. She wore the sacred Brahman cord about her neck and her bare feet were thrust into sandals. Mrs. Besant claims to have been a Brahman in a previous incarnation.

A revival of pure Hindulsm is one of the objects if not the chief object of the college, which also gives instruction in the Western sciences. It was as surprising as it was disgusting to find that this institution, with a staff of European Theosophists among its teachers, and supported in good part by funds

# TO TEST THE TUNNEL

its teachers, and supported in good part by funds from Europe and America, should have as the one conspleuous figure on its campus, in heroic size, the unmentionable Shiva symbol. If Boston only knew:

#### Experimental Trains Under the East River Soon.

The tunnel under the East River from Manhattan to Brooklyn will be tested with experimental trains about the end of September. Another month, it is confidently expected, will see regular trains running from the terminus of the subway system at the Battery to the Borough Hall station of the new subway on the other side of the river.

This is the prediction of Frederick C. Noble,

once—he is not obliged to bother about the common moralities which go along with the Western faiths.

One of the holiest as well as one of the brainiest was reclining on a couch of sharpened nails (a torture which probably looked more horrible than it felt, for this man underwent it with no sign of discomfort) when I interviewed him, through an interpreter. I asked him about the "holy woman" at his side, comely even through her ashes, on account of whom this celebrated fakir is considered outcast by certain of the stricter sort of new Hindus. He assured me that the woman merely lived with him to take care of his house, and that he is not married to her. India is full of stories of the immoralities of these "holy men," who, as they march in procession stark naked through the streets, are truer to type than when on their visits overseas they sit, picturesquely clad, the adored centre of groups of American little work. When we are able to remove the air little work. When we are able to remove the air pressure from both tubes, completion will be a matter of only a few weeks, for we will be able to put ordinary labor at work and make the shifts. put ordinary labor at work and make the shifts

matter of only a few weeks, for we will be apie to put ordinary labor at work and make the shifts continuous night and day.

"A great deal of nonsense has been talked and written about the difficulties we have experienced in running these two tubes under the river. Before the work was started we knew pretty well what we were up against, from the engineers' reports. The actual work disclosed only the conditions which the previous reports led us to expect. The job was a difficult one, but the most faulty work was the result of bad management on the part of one of the sub-contractors. This faulty work has cost a lot of money to correct, but in repairing the faults we have certainly made the tunnel safe to a degree far in excess of what is required. The parts where reconstruction has taken place are much stronger than they would have quired. The parts where reconstruction has taken place are much stronger than they would have been had the work been carried out without faults and as it was first planned. The work of underpinning the sections of the tubes which run through soft soil is, in my opinion, a wholly unnecessary precaution, and was undertaken by the contractor more to reassure the public than because of any real danger. When the pile work is completed, in about three weeks' time, every section of the tunnel will rest upon hardpan foundations—in most cases upon soild rock—so that the possibility of accident is completely removed.

# TRIP OF INSPECTION.

Acting upon the principle that seeing is believ-ing, a Tribune reporter secured permission to go through one of the tunnel tubes from the Brook-lyn to the Manhattan shore. The difficulties which lyn to the Manhattan shore. The difficulties which were encountered at the outset of the work were plainly evident before going underground at all. The buildings upon both sides of Joralemon street, from the intersection of Clinton street down a comparatively steep hill to the builkhead line on the river bank, look as if they had come through a San Francisco earthquake. A few of the more sturdy structures do not show outward evidence of damage, but most of the buildings exhibit gaping cracks caused by the sinking of the street level. Some of the worst are shored up with huge timbers to prevent them from tumbling into the street. When the work was started the first shaft was sunk from the surface of Joralemon street just over the creet of the hill at Clinton street. A short distance below the surface a sandy clay short distance below the surface a sandy clay with shifting propensities was encountered, similar to that found in excavations for high buildings in the lower end of Manhattan Island. When the shaft reached the river level this shifting soil carried water, and at once became most difficult to work in. It had no consistency, and fooded into the excavations under the coisson livings. work in. It had no consistency, and flooded into the excavations under the caleson linings as fast

as it was taken out. Compressed air was forced into the shaft, and in this manner the tunnel level was finally reached, the flooding being prevented by a false bottom, which made the shaft practically a hollow calson box resting upon a mass of shifting soil.

When the buge fifteen and a half feet shields were stored on their border, process toward the

When the huge fifteen and a half feet shields were started on their boring process toward the bed of the river difficulties began to multiply. Not only did the weight of the shield cause it to dip downward in the soft soil as it was pushed forward, but the weight of the cast iron tube sections, which were placed in the bore hole as the shield proceeded, caused a further sagging below the true level. The unevennesses in the tube levels made the cast iron sections crack and break, and there were heavy leakages through these cracks and faulty joints of soil and water into the interior of the tube. This steady accumulation of soil from under and around the tubes was pumped out instead of being kept out of the tubes by a son from under and around the tubes was pumped out instead of being kept out of the tubes by a sufficient pressure of air. This caused not only a further deflection of the tubes from their true levels, but it removed large quantities of soil from under the street and started the sagging process of the street level. This sagging process was not noticeable at first, but long after the two tubes were completed under the street it went on, stradually producing the sesuits described upon the gradually producing the results described upo gradually producing the results described upon the buildings in Joralemon street. After a great deal of faulty work it was found necessary to sink an-other shaft at the foot of the hill close to the bulk-head line on the river front, and work from that point upward toward the first shaft borings. When the two tubes were finally finished and calked so that there were no more leakages the true tunnel that there were no more leakages the true tunnel level had been sadly departed from. At one point there was a downward deflection of as much as twenty-eight inches, and hundreds of tons of soil had been removed more than was necessary to carry the tubes. The alignment of both tubes was so crooked that plates had to be removed in order to level up the bottom. It was in this short section that most of the broken plates occurred, and they had also to be replaced.

#### DEFLECTIONS FROM THE LEVEL.

This section of the double tube tunnel is now completed, and a steel lined calsson is being put In haifway up the hill, to be used as a ventilating shaft. When this is finished the shore side of the tunnel will be completed and the soll disturbed for

After examining the shore section, which Mr Noble explained was by far the worst bit of work in the entire construction, the reporter travelled out under the river along a section which is built through coarse sand, that makes a solid bearing through coarse sand, that makes a solid bearing foundation. In this part there are few defects. Both tubes are caulked in this stretch, and ready to receive the final lining of cement on the inside. Entering an alricok where the atmospheric pressure was increased to seventeen pounds to the square inch, the reporter was ushered into an eight-hundred-foot section which has been run through fine sand and river silt. Here and there is evidence of difficulties encountered in the work of construction. The true tunnel level has been departed from in soveral places, giving the alignment a wavy effect. At one point there is a downward deflection, caused by the pitching of the shield, of as much as ten inches, made greater by fourteen inches by subsequent sagging during construction and after. Again the wavy line is in evidence in the slignment of the tubes, showing dedence in the alignment of the tubes, showing de-partures from the true level.

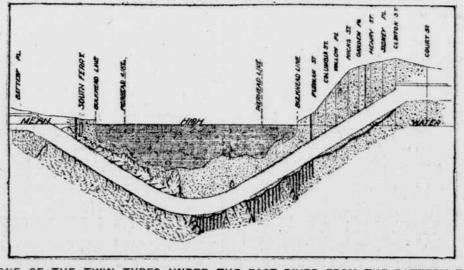
These deflections could have been obviated to a

great extent, Mr. Noble explained, had the con-tractor added to his compressed air plant as fast at it was required. Though repeatedly warned, he This is the prediction of Frederick C. Nobla, divisional engineer of the Rapid Transit Commission, who has been in charge of the work on the tunnel since its beginning, and is, therefore, in a position to speak from experience as to the length of time that will be required to have it ready for public use. that to-day there is just three times the capacity in the compressed air plant that was considered adequate when the work was started. The correction of the wavelike deflections in the alignment of the tubes was effected by taking a lower level line and removing the bottom plates of the sections and replacing them, so that the floor of both tubes, though lower than the true level, is in a comparatively straight line. The wavy effects in the roof were left in order to give additional head room to the eight inches originally provided for above the tops of the cars. Though a general depression can be noticed in the centre of this 800-foot section of both tubes, the floor level does not appear to be particularly out of plumb. Walking through, one could not notice it, and when the tracks are in place it will be even less noticeable.

A gang of "sandhogs" was at work at intervals A gang of "sandhogs" was at work at intervals of about fifty feet along the section, sinking the the greatest sinking took place during and after construction. In order to put a pile in place a section is cut out of the bottom of the tube. Cast-fron cylinders 29 inches in diameter and 7 feet in length are sunk in the soft soil under the tube, one on top of the other, until bedrock is reached. As the cylinders are sunk they are filled with concrete reinforced with beavy fron bars. The concrete is allowed to settle and harden as the piles are being driven. The two piles of each traverse are about seven feet apart, and between them is a bed of re-inforced concrete, upon which the round bottom of the tubes rest, so that when completed both tubes throughout the entire length will rest upon a concrete bed supported by piles at either end which reach down through the soft soil to bedrock. The length of the piles varies from ten to fifty feet. ALL FAULTS CORRECTED.

> A second airlock let the reporter into another section, about seven hundred feet in length, extend-ing from the rock ree! in the middle of the river to where the tubes enter the rock formation on the Manhattan side. This is the section of both tubes last constructed, and is furthest from completion. The soil through which the tunnel was driven is similar to that of the previous section, and the work of construction was difficult. The same wavy denections from the true level occurred at several places. At one point both tubes are some twelves inches below level. All the faults in construction have been corrected, the floors levelled up, and a force of "sandnogs" is at work sinking the pile foundations. deflections from the true level occurred at several

Still another alriock took him out into the Manhattan section, where the tunnel runs through solid rock to the Battery shore. This section is about 2,400 feet in length, and the work of construction is so far advanced that the air pressure has been removed in both tubes. The concrete lining of the interior is about finished, the conduit duct benches are installed, and the drain pipes under the track beds are in place. The tunnel is to have an elaborate drainage system. At intervals of a few hundred feet throughout the entire length under the river the space between the two tubes will be inclosed with caisson work and a sump chamber made, having access to both tubes. In these sumps there will be placed a system of pumping ma-chinery, whereby the water from leakages and pos-sible accidents will be pumped out at either en-trance. At the Battery end of the south tube track bed and track have been laid from the entrance for a distance of about 500 feet. This is the last stage of the work of construction.



ONE OF THE TWIN TUBES UNDER THE EAST RIVER FROM THE BATTERY TO BROOKLYN.

Dark, wavy line underneath shows how the tube sank in places below the intended level. Per-pendicular lines show the piling that has been driven to bedrock beneath it to prevent any further sinking.

# TEACH THEM TO "SEE."

Great Things Can Be Done for the Blind Nowadays.

By E. B. Simmons.

All through the ages the people who were "different," the blind, the deaf and dumb, the deformed, the mentally diseased and the geniuses, have suffered by reason of a curious delusion on the part of the rest of the world. The average individual, being possessed of sight, speech, hearing, two arms and two legs, and average commonplace intelligence, finds it difficult to think that anybody whose equipment differs from his is inside the pale of everyday life, or capable of being brought there, Few have smarted under this feeling as have the blind. Even in this twentieth century it pursues them. Edward Perry, the blind planist, who travels constantly, giving concerts, says that he hardly ever goes into a smoking car to have a cigar but some one exclaims in tones of great surprise, "Why, can you smoke?"

It is when this feeling on the part of the sighted takes the bread out of the blind man's mouth that it becomes serious to him. It is merely amusing to have people fancy that because a man cannot see he cannot enjoy a smoke, but they go further and assume that because he cannot see he cannot see he cannot enjoy a smoan, cannot see and assume that because he cannot see

and assume that because he cannot see he cannot work.

Not long ago Miss Winifred Holt, secretary of the New York Association for the Blind, received a letter, one of many. It said:

"Miss Holt, I am thirty years old and an inmate of a home for the aged and indigent blind. Will you help me to get work?"

A young man, willing to work, told off to eat the bread of charity with the "aged and indigent" because his sight had left him! This, when Gallieo, blind and seventy, thought out the practical application of the pendulum to clockwork, and wrote, through his secretaries, some of his ablest things; when the blind Cuvier made experiments valuable to science; when a blind man is president of the great Herreshoff company, which puts forth yachts that beat the British!

that beat the British!

that beat the British!

Not all blind men can head great business enterprises, or write books, but many if taught can tune planes, or massage the sick, or operate a telephone switchboard, and even the dullest can learn to cane chairs and make brooms. But when a man is stricken with blindness in midlife, a workman at a trade which requires sight, it is hard for him to adjust himself to the changed conditions. It is well nigh impossible, if he must might on every side the common feeling that for a



BLIND GIRL OPERATING A TELEPHONE

SWITCHBOARD. One of several trained to be self-supporting by the New York Association for the Blind.

corner and a tin cup. But if there is some one to hold out a helping hand he may prove this feel-ing the mistake it is. There is a man living now in upper Broadway who has done that most thor-

sightless. After he got out of the hospital he was

school and learn to make brooms."
"But I can't see," the man objected.
"That's why I came," said the other.

"That's why I came," said the other.

The man went to Batavia and learned to make brooms. He obtained a broom machine, and set up for himself at home. Starting with nothing, he worked so hard and marketed his goods so well that he supported himself and his wife and saved a little money. He saved enough to buy three horses and, hiring a man to drive them, branched out into the trucking business. Eventually he bought more borress and one had been set as the same and same a horses, and now he has six drivers employed. He has given up broom making, and devotes himself o his growing business. Sitting under a tree in his yard, one day, he told

a Tribune reporter how he orders his time. He rises at 4:30 o'clock in the morning, feeds the horses, kindles the kitchen fire and fills the kettle and grinds the coffee for his wife. While the men eat breakfast he hitches up the horses, and then he has his own breakfast. After that he lies down awhile, and then he smokes his pipe, while his wife or one of the neighbors reads the newspaper to him. At 5 p. m. the men begin to come in, and then he washes the wagons and feeds the horses and curries them and beds them for the night. The whole thing is in his hands, and he does all the

planning and managing.
"Sure, I don't often think about being blind," he remarked. "I've too much to do."

# A PICTURESQUE START.

To hold out the helping hand in cases like this is To hold out the helping hand in cases like this is one of the objects of the New York Association for the Blind, incorporated in New York in 1998. The story of the birth of this organization is rather a pretty one. Sitting in a concert hall, some years ago, Miss Winifred Holt and her sister, Miss Edith Holt, observed two blind boys who were taking a great and obvious pleasure in the music. There were some empty seats in the hall. Putting the empty seats and the happiness of the blind boys together the sisters had an idea. Would not seen together, the sisters had an idea. Would not con-cert managers be willing to give unsold tickets for the use of blind music lovers who could not afford to buy them? Certain managers were approached and agreed to co-operate, and the Committee for Tickets for the Blind was formed. But the men and women who exerted themselves for this saw more and more how many things ought to be done for the blind-things which have been done for years in some European countries, but in which the United States is strangely backward.

In France there are in connection with the great National Institution for the Blind workshops and employment bureaus for the adult blind, exchanges where their work is sold, Braille libraries, with where their work is sold, Braille libraries, with shipping departments for sending Braille books to the blind all through France and to other coun-tries. In Germany there is the Saxon system, by which the directors of schools for the blind help the graduates to get established in business or a trade and keep track of them and stand ready to help them wherever they are. The United States has fine schools for the blind, but the blind need something beyond an education; at least some of something beyond an education; at least, some of them do. Besides, three-quarters of them become blind after school age. Perceiving that for such as these absolutely nothing was being done beyond the erection of a few charitable homes for tha penniless, the officers of the Committee for Tickets for the Blind determined to step into the by Consequently the New York Association for the Blind came into being, and proposes, if it can get the money it needs, to stand the friend of all

gers street to 42d street; Tuesdays, the upper East Side; Wednesdays, the lower West Side; Thursdays, the upper West Side; Fridays, The Bronx, and Saturdays, Brooklyn. A little Polish girl acts as her guide, but it is the blind woman who tells the child what car to board and what direction to take. She seems to have New York in her head, and never makes a mistake.

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An old man, once an officer in the United States army, came to the association. He had loved to play cards in his lesiure, but now he was blind, and so tired of doing nothing. "Why don't you play cards?" asked Miss Holt. "But I'm blind. No more whist for me," said the old major sorow-fully. Then the cards made especially for the blind were shown to him, and he took a pack and went home rejoicing. Blind people of all runks and conditions present or send all kinds of appeals to the offices of the association, at the home of its founder, which offices the association would like to change, because they are totally inadequate to its needs. Barring its small workshop for the blind in 42d street and the work of the outside teacher, all 42d street and the work of the outside teacher, all the activities of the organization are carried on in this private house.

#### MORE ROOM NEEDED.

"See what is crowded into this one room," said Miss Holt, indicating an upper apartment of ordinary size. Three or four persons, including one bilind man who had come there to ask for employment, were busy getting out letters and folding circulars. A blind pupil was having a typewriter lesson. In one corner was a cupboard filled with the work of blind men and women, which was there on sale-slippers beautifully knitted, beadwork, aprons, dusters, articles carved out of wood. Another cupboard was filled with clothing, which is given to those of the blind who need it. At the end of the room was a telephone switchboard, and a blind sirl operator was initiating an old blind man. "See what is crowded into this one room," end of the room was a telephone switchboard, and a blind girl operator was initiating an old blind man into the mysteries of the thing, and remonstrating because he would call the cams "the cans." "You see," Miss Holt said, "why we want money. We so much need, slong with a few other things, more room."

That telephone switchboard has been the means of putting more than one blind girl in the way of at least a partially self-supporting career. When the idea of blind people operating the board was first broached to the telephone companies it was received with polite incredulity, but the idea is turning out to be a perfectly feasible one. Now and then one becomes expert. Not long ago, in Virginia City, Va., a blind girl, Susie Davis, won out against a number of seeing competitors in a spirited contest to determine the fastest operator, Here in New York a blind girl operates the keyboard in one of the heapitals. It is marvellous to board in one of the hospitals. It is marvellous to see her hands dart unerringly to the right place when a call comes, though with her eyes she can-not tell day from night. There is a blind girl operator in one of the downtown business houses, and her employer declares he prefers a blind girl to a seeing one. "She attends to her work better," he said. "She heave so many outside distractions. to a seeing one. "She attends to her work better," he said. "She hasn't so many outside distractions. Her work means more to her, because she has little else. She requires a bit of help with names and numbers she hasn't heard before, but every new number she immediately writes down in point' with her stenographic machine and memorizes it. I think a switchboard could be invented." he added, "with little bells of different tones to indicate the place in the building the call comes from. That would simplify telephone work for the blind, but a blind person can operate a small board of the present kind perfectly well, if employers would only believe it. No, I'm not a philanthroptst. To employ the blind at work they can do is plain economics. They've got to live, haven't they'."

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The association is the ploneer, so far as New York is concerned, in teaching the work of the switchboard to the blind. Three of its pupils are now holding responsible positions and a fourth has been asked for.

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and number of blind who in one way or another have distinguished themselves is so great that the briefest survey of the field gives rise to a deep wonder at the prevalent feeling that a blind person is not "in it" for practical purposes. Visial, the blind French sculptor, entered a lion's cage and studied the anatomy of the animal from touch, that he might model it. Dr. James Gale, the physician known all over England as the "blind inventor." who died recently full of years in articol bit. who died recently, full of years, in spite of his biladness won royal honors by his discoveries and inventions, and among the cures he wrought was one so remarkable that it brought from the patient. a millionaire, the biggest fee on record, it is said.
Columbia University has a blind professor who holds a life fellowship there, and two blind students, one of whom, incidentally, has to support himself, as he has no funds. One of the graduates last spring at Bates College, in Maine, was a totally blind man, Francis A. Rockford, and he was gradu-ated with honors. He was popular with the other students, and took an immense interest in athletics. The other day a man died in Maryland, a woodcutter, seventy years old, who was blind from his youth, yet who penetrated dense wilds along, felling trees, making picks for the miners, or cut-

ting six but, and goes for the hiners, or cutting six hundred shingles a day.

Although the blind man has lost one sense, he
has others which, if developed, will carry him
through life very well. Just above Lincoln Square
in New York is a stand kept by "Billy the newsboy," a totally blind man. This man lives in Long
Island City, and goes to business every day by
himself.

which you, having eyes, don't have to notice," he said to the reporter. "Have you observed that pavements are always depressed a bit for about three inches back from the curb? When I'm walking, that's what tells my feet where the crossings are. Then in the schools for the blind our ears are trained to serve us almost as eyes, you know, and I was in a good school from my sixth year till I srew un."

seen often coming down the Hudson to the city the deck of the steamer half covered with vege-tables he has selected by the sense of touch. There is another man who deals in fine horses. blind, but he "sees" every point of the animal with his wonderfully sensitive hands. These are the men who started out with education, with courage and initiative. But there are many blind people who lack one or the other, or all, of these qualities, and

# A CAREFUL CENSUS.

Among the other activities established by the sociation in the Hoit home has been a census oureau. Through the efforts of the two sisters, a bureau. Through the efforts of the two sisters, a legislative commission was appointed to find out the number and condition of the blind in the state of New York. Thoughtful typhlophiles did not wholly trust the regular census taker. As Eben P. Morford, the blind superintendent of the Brooklyn Industrial Home for the Bilind and a member of this legislative commission, says, census takers have a careless way of putting down a one-legged man as blind, or a blind man as deaf or imbecile. Therefore the state was induced to appropriate Therefore the state was induced to appropriate \$5,000; Miss Edith Holt, who volunteered her services, was pinced in charge, and correct and ex-haustive facts regarding the six thousand blind persons in the State of New York were gathered and put into such shape that they can be of the

and put into such shape that they can be of the utmost practical use.

Life cannot be precisely a cheerful thing for the blind, despite the cheerfulness with which so many of them take up the burden. Walter Holmes, publisher of the "Mrs. Ziegler Magazine for the Blind," tells a story of a blind friend of his whom an old aunt was trying to console for his affliction.

"Any way, Johnny," she said, "by being blind you escape seeing a lot of the sin in this world." "Yes, aunt," he said, meekly, "but I'd like to train at escape seeing a lot of the sin in this world. "Yes, aunt," he said, meekly, "but I'd like to train at least one eye on it now and then." They miss experiences, and they miss so much of the beauty. The blind can never see the sunrise, or the flowers, or the trees against the evening sky. A blind man, however much he loves his child, can never see it smile. They miss so much that it is only justice to the high other ways as it is only to make it up to them in other ways, as it is only good economics to give every one of them the chance to do some work in the world and awaken courage in those who have lost it. That is what the Association for the Blind is trying to do. It is trying to do something else—it is trying to pro-vent unflecessary blindness. At least ten per cent terrying to a something case—it is trying to event unifecessary bilindness. At least ten per cent of the bilind were made so by lack of proper care of the eyes at birth. The association hopes to secure a law obliging physicians and nurses to recure a law obliging physicians and nurses to re-port instantly all cases of infantile ophthalmia, and in the meantime it is distributing leaflets for the instruction of nurses and midwives. It hopes, too, to compel better safeguards in glass factories and other establishments where the eyes of the work-men are endangered.

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The president of the association is Richard Watson Gilder, and Miss Helen Keller is one of its vice-presidents. She is actively interested in the work, for which she made an eloquent appeal in person last winter at the Waldorf. Dr. Lyman Abbott, the first president of the association, said: "The new movement demands that the community do for the billind what it does for the seeing—teach them to read and write, and equip them for self-support by training them in those industries in which experience has proved they can become prosupport by training them in those measure proficient. I do not ask charity for the blind, I only ask that justice be done for them."

Blind applicants, men and women, go to the association daily asking for the blessing of work. It can be given them if funds permit. When the

Blind came into being, and proposes, if it can get the money it needs, to stand the friend of all New York blind who want its help.

So far it stands alone in the work it is doing for the adult blind. If the association did nothing else, it deserves support for the light that is being carried into darkened lives by its home teachers. In London there are fourteen instructors, who go about cheering and teaching the home-bound blind. New York has the association's six—one who devoles all her time to the work and five supplementary teachers. Six more would not be too many. The original home teacher of the association is totally blind, yet she lives alone, takes care of her flat and of her two canaries, fluts time to knit exquisite lace, and in the course of the week travels over the entire city, teaching blind people typewriting, sewing, basketry and various other things. Mondays she covers the district from Rut-